

CLAIMS

1. (Currently Amended) An improved method of processing corn plants with a corn head row unit comprising the steps of:
 - a. engaging the corn plant with a plurality of stalk rolls,
 - b. pinching the corn plant between said stalk rolls,
 - c. pulling the corn plant stalk down with said stalk rolls,
 - d. separating said ear of corn from the corn plant stalk,
 - e. engaging said ear of corn with at least one gathering chain paddle,
 - f. having the speed of said stalk rolls and gathering chain paddles fixed during operation;
 - g. wherein the velocity of said gathering chain paddle creates minimal stalk shear; and,
 - h. wherein the maximum ear separation substantially vertical velocity creates minimal damage to the ear of corn upon impact with the stripper plates.
2. (Previously Presented) An improved arrangement of a corn head row unit comprising:
 - a. a source of power for rotation,
 - b. at least one stalk roll for engagement with a corn plant stalk,
 - c. said stalk roll having at least one flute,
 - d. a stripper plate,
 - e. at least one gathering chain having paddles,
 - f. a gearbox fixing the speed of said gathering chain paddles and said stalk roll flute during operation,
 - g. wherein the gearbox ratio is selected to create minimal stalk shear; and,

- h. wherein the resulting maximum ear separation velocity creates minimal damage to the ear of corn upon impact with the stripper plates.
3. (Previously Presented) An improved arrangement of a corn head row unit according to claim 2 having two opposing stalk rolls for engagement with a corn plant stalk.
 4. (Previously Presented) An improved arrangement of a corn head row unit according to claim 2 wherein said stalk rolls have an enlarged length to minimize stalk shear.
 5. (Previously Presented) An improved arrangement of a corn head row unit according to claim 2 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.
 6. (Previously Presented) An improved arrangement of a corn head row unit according to claim 2 wherein said stalk roll diameter has been increased to minimize stalk shear.
 7. (Previously Presented) An improved arrangement of a corn head row unit according to claim 3 wherein said stalk rolls have an enlarged length to minimize stalk shear.
 8. (Previously Presented) An improved arrangement of a corn head row unit according to claim 3 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.
 9. (Previously Presented) An improved arrangement of a corn head row unit according to claim 3 wherein said stalk roll diameter has been increased to minimize stalk shear.
 10. (Previously Presented) An improved arrangement of a corn head row unit according to claims 7, 8, or 9 wherein said row unit has a shear point with a rounded edge.

11. (Currently Amended) An improved method of processing corn plants with a corn head row unit comprising the steps of:

- a. engaging the corn plant with a plurality of rotational elements,
- b. pinching the corn plant between said rotational elements,
- c. pulling the corn plant stalk down with said rotational elements,
- d. separating said ear of corn from the corn plant stalk,
- e. engaging said ear of corn with at least one horizontal element,
- f. said horizontal element substantially moving only ears of corn for collection and further processing within the threshing unit of a combine,
- g. wherein the velocity of said horizontal element minimizes the occurrence of corn plant stalk separation due to corn plant stalk movement restrictions created by said rotational and horizontal elements; and,
- h. wherein the speed of said rotational and horizontal elements is fixed during operation.

12. (Previously Presented) An improved arrangement of a corn head row unit comprising:

- a. a source of power for rotation,
- b. at least one stalk roll for engagement with a corn plant stalk,
- c. said stalk roll having at least one flute,
- d. a stripper plate,
- e. at least one gathering chain having paddles,

- f. a gearbox fixing the speed of said gathering chain paddles and said stalk roll flute during operation,
 - g. wherein the gearbox ratio is selected to produce a gathering chain paddle velocity which minimizes the occurrence of corn plant stalk separation due to corn plant stalk movement restrictions created by said stalk rolls and gathering chain paddles; and,
 - h. wherein the resulting maximum ear separation velocity creates minimal damage to the ear of corn upon impact with the stripper plates.
13. (Previously Presented) An improved arrangement of a corn head row unit according to claim 12 having two opposing stalk rolls for engagement with a corn plant stalk.
14. (Previously Presented) An improved arrangement of a corn head row unit according to claim 12 wherein said stalk rolls have an enlarged length to minimize stalk shear.
15. (Previously Presented) An improved arrangement of a corn head row unit according to claim 12 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.
16. (Previously Presented) An improved arrangement of a corn head row unit according to claim 12 wherein said stalk roll diameter has been increased to minimize stalk shear.
17. (Previously Presented) An improved arrangement of a corn head row unit according to claim 13 wherein said stalk rolls have an enlarged length to minimize stalk shear.
18. (Previously Presented) An improved arrangement of a corn head row unit according to claim 13 wherein said gathering chain drive sprocket size has been reduced to minimize stalk shear.

19. (Previously Presented) An improved arrangement of a corn head row unit according to claim 13 wherein said stalk roll diameter has been increased to minimize stalk shear.

20. (Previously Presented) An improved arrangement of a corn head row unit according to claims 17, 18 or 19 wherein said row unit has a shear point with a rounded edge.

21. (Previously Presented) An improved arrangement of a corn head row unit according to claim 20 wherein said shear point is removable allowing for replacement.

22. (Currently Amended) An improved arrangement of a corn head row unit comprising:

- a. means for engaging a corn plant with a plurality of rotational elements,
- b. means for pinching a corn plant between said rotational elements,
- c. means for pulling the corn plant stalk down with said rotational elements,
- d. means for separating the corn plant ear from the corn plant stalk,
- e. wherein the maximum ear velocity allowed creates minimal damage to the ear of corn upon impact with said separation means,
- f. means for engaging an ear of corn for horizontal movement to an ear collection means and further processing within the threshing unit of a combine,
- g. wherein the maximum velocity of said means for engaging an ear of corn for horizontal movement creates minimal stalk shear; and,
- h. a power source for said engaging, pinching, pulling and horizontal movement means wherein the speed of said means is fixed during operation.

23. (New) A combination of cooperating elements offered as a kit for improved operation of a single corn head row unit comprising:

- a. a gathering chain drive sprocket having a reduced size to minimize stalk shear; and
 - b. at least one gathering chain.
24. (New) The combination of cooperating elements offered as a kit according to claim 23 also including enlarged gathering chain paddles for attachment to at least one gathering chain.
25. (New) The combination of cooperating elements offered as a kit according to claim 23 also including a second gathering chain.
26. (New) The combination of cooperating elements offered as a kit according to claim 23 also including a set of stripper plates.
27. (New) The combination of cooperating elements offered as a kit according to claim 23 also including a set of stalk rolls.
28. (New) The combination of cooperating elements offered as a kit according to claim 23 wherein the gathering chain drive sprocket has five teeth.
29. (New) The combination of cooperating elements offered as a kit according to claim 23 wherein the gathering chain drive sprocket has eight teeth.
30. (New) A combination of cooperating elements offered as a kit to minimize stalk shear for a single corn head row unit comprising:
- a. a gathering chain drive sprocket size having a reduced size to minimize stalk shear;

- b. at least one gathering chain;
 - c. at least one stripper plate; and,
 - d. at least one stalk roll.
31. (New) The combination of cooperating elements offered as a kit according to claim 29 also including enlarged gathering chain paddles for attachment to at least one gathering chain.
32. (New) A combination of cooperating elements offered as a kit to minimize stalk shear for a single corn head row unit comprising:
- a. a gathering chain drive sprocket size having a reduced size to minimize stalk shear;
 - b. a set of gathering chains;
 - c. a set of stripper plates; and,
 - d. a set of stalk rolls.
33. (New) The combination of cooperating elements offered as a kit according to claim 31 also including enlarged gathering chain paddles for attachment to at least one gathering chain.
34. (New) The combination of cooperating elements offered as a kit according to claim 31 or 32 wherein the gathering chain drive sprocket has five teeth.
35. (New) The combination of cooperating elements offered as a kit according to claim 32 wherein the gathering chain drive sprocket has eight teeth.

36. (New) An improved method of processing corn plants with a corn head row unit

comprising the steps of:

- a. engaging the corn plant with a plurality of stalk rolls,
- b. pinching the corn plant between said stalk rolls,
- c. pulling the corn plant stalk down with said stalk rolls,
- d. separating said ear of corn from the corn plant stalk,
- e. engaging said ear of corn with at least one gathering chain paddle,
- f. having the speed of said stalk rolls and gathering chain paddles fixed during operation; and,
- g. minimizing stalk shear created by contact between the gathering chain paddle and the corn stalk by using a powered gathering chain drive sprocket having eight (8) teeth in combination with a gathering chain sprocket having ten (10) teeth.

37. (New) An improved method of processing corn plants with a corn head row unit

comprising the steps of:

- a. engaging the corn plant with a plurality of stalk rolls,
- b. pinching the corn plant between said stalk rolls,
- c. pulling the corn plant stalk down with said stalk rolls,
- d. separating said ear of corn from the corn plant stalk,
- e. engaging said ear of corn with at least one gathering chain paddle,
- f. having the speed of said stalk rolls and gathering chain paddles fixed during operation; and,
- g. minimizing stalk shear created by contact between the gathering chain paddle and the corn stalk by using a powered gathering chain drive sprocket

having five (5) teeth in combination with a gathering chain sprocket having eight (8) teeth.